

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
15 March 2001 (15.03.2001)

PCT

(10) International Publication Number
WO 01/17747 A1

(51) International Patent Classification⁷: B29C 47/00, (74) Agent: WHEELER, David, E.; The Goodyear Tire & B60C 11/00 // B29K 21:00 Rubber Company, 1144 East Market Street, Akron, OH 44316-0001 (US).

(21) International Application Number: PCT/US99/20389

(22) International Filing Date:
7 September 1999 (07.09.1999)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant (for all designated States except US): THE GOODYEAR TIRE & RUBBER COMPANY [US/US]; Dept. 823, 1144 East Market Street, Akron, OH 44316-0001 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): CHANG, Ching-Chian [US/US]; 4469 Conestoga Trail, Copley, OH 44321 (US). VOGLIANO, Robert, Henry [US/US]; 953 Arwood Drive, Tallmadge, OH 44278 (US). SHAW, Cheng [US/US]; 104 Scenic View Drive, Copley, OH 44321 (US).

(81) Designated States (national): AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FL, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW.

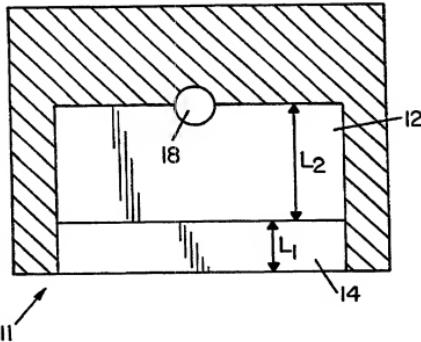
(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

— With international search report.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ORIENTATION OF SHORT FIBERS IN A CONTINUOUS PROCESS



(57) Abstract: A method and apparatus for continuously processing fiber into an elastomeric component uses an expanding die (11, 11a) for orienting fibers in other than the processing direction of the extrusion. In one embodiment, an injection mold (50) is used with the expanding die (11), and in another embodiment, an extruder (30) is used with expanding die (11a). Processing parameters may be altered to control the direction of orientation of fibers (20) in the elastomer component. Orientation of fibers (20) in an extrudate (17) is dependent on the processing speed, viscosity of the elastomer, pressure of extrusion, the length l_1 and l_2 and height h_1 , respectively, of the gate (12) and expansion cavity (14).